WORKING PAPER

TRENDS AND FORECASTS IN TRANSPORT

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Economic Analysis Directorate
Transport Canada

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TRENDS AND FORECASTS IN TRANSPORT

AN OVERVIEW

This report is structured in three parts. Part 1 presents the macroeconomic and regional setting upon which the transport forecasts are based. Transport demand is a derived demand and aviation and freight forecasts summarized in this report are consistent with the national and regional economic forecasts developed within the Economic Analysis Directorate of Transport Canada. The economic scenario does not reflect the introduction of GST, as it was developed before the Department of Finance's last budget.

Part 2 of the report presents an overview of recent trends in the air sector. Forecasts of volume of activity are summarized by sector of activity and region. Appendix I presents a summary of the fleet acquisition program of the Canadian airlines over the next few years.

Part 3 deals with freight trends and forecasts. The format is similar to the previous part. However the analysis is extended to three modes: marine, rail and truck. Appendix II summarizes the key commodity assumptions developed for the forecasts of rail and marine traffic.

1.0 MACROECONOMIC AND REGIONAL FORECASTS

1.1 The 1983-88 Period

Being a derived demand, transportation is dependant on the level and change of the socio-economic activities in Canada and its trading partners. In 1989, the Canadian economy entered its seventh year of uninterrupted growth since the 1982 recession.

In the period of recovery from the worst post-war economic recession and the ensuing expansion phase that has followed, exports were the major source of strength followed by investment and the consumers' expenditures. As a result, economic growth during the period 1983-88, averaged 4.5% a year.

This surge in the economy, particularly in the export market, generated increased activity in the transportation services sector which expanded at an average annual rate of 5.2%, higher than the average service or goods producing industry (Table 1.1.1), partly due to the fact that the transportation sector was one of the hardest hit by the 1982 recession.

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TABLE 1.1.1 Real Domestic Product Average Annual Percent Change (AA%C)	
	1982-88
Total Economy	4.5
Service Industries	4.6
Goods Industries	4.4
Transportation	5.2

As the economic cycle continues to mature and demographic realities slowly but unmistakably restructure our labour and consumer markets, lower future economic and transportation growth rates are expected.

1.2 National Forecast

In 1989, despite weakness in oil and gas exploration activity, business non-residential investment is expected to be the major source of growth in 1989. As a result, imports will increase sizeably and, with exports slowing down, the current account will post a record deficit: over $12 billion. Lower economic growth and the poor performance of exports will limit growth in the transportation sector to less than 1% in 1989.

TABLE 1.2.1 MAJOR MACROECONOMIC INDICATORS AA%C, 1988-1996		
	1988-91	1991-96
Total GDP	2.4	2.5
GDP Transport	2.7	2.6
Consumption	2.0	1.9
NR Investment	4.0	4.2
Gvt Expenditures	1.5	1.3
Exports, G&S	3.6	3.5
Imports, G&S	3.2	2.8

Over the longer term, economic growth over the sub-periods 1988-91 and 1991-96 is expected to average 2.4% and 2.5% respectively (Table 1.2.1). While economic performance in the first sub-period will be greatly

affected by an expected slowdown in economic activity in 1990, longer term prospects to 1996 are more likely to be shaped by underlying potential socio-economic forces and the impact of maturing government market-oriented policies. Under these conditions, growth in transportation activity is expected to closely track overall economic growth in both sub-periods.

While the variables in Table 1.2.1 may have an overall impact on the transportation sector in general, others are more specific to the sector and tend to be closely monitored by transportation analysts inside and outside government, their effect on the sector being felt more directly. Many of the variables in Table 1.2.1 and Table 1.2.2 are used to estimate future demand for transportation services and requirements in terms of infrastructure and employment.

TABLE 1.2.2

TRANSPORT-RELATED VARIABLES, AA%C

	1988-91	1991-96
Real Income/Capita	1.0	1.5
Population	1.0	0.9
CPI	4.0	4.1
Oil prices	3.2	6.0

1.3 Provincial Forecasts

Major economic fluctuations in Canada usually originate in the external sector, reflecting the openness of the Canadian economy. Such fluctuations are even more important at the provincial level where many provinces have an industrial structure geared to external markets, a factor of particular importance to the transportation sector. While over 50% of all transportation activity takes place in Central Canada, its relative importance varies greatly between provinces but generally higher in Western Canada where the primary sector is more important.

TABLE 1.2.3

PROVINCIAL OUTPUT, INCOME AND POPULATION; AAPC; 1988-96

	GDP	PRDI/CAP	POP.
Nfld	2.8	0.9	0.2
PEI	2.1	1.0	0.4
NS	1.8	1.4	0.6
NB	1.7	1.2	0.3
Que	2.4	1.3	0.5
Ont	2.9	1.4	1.1
Man	1.7	1.2	0.5
Sask	2.1	1.7	0.6
Alta	2.3	1.6	1.5
BC	2.1	1.2	1.5
Canada	2.5	1.4	0.9

Most of the strength in economic growth in the Atlantic region will originate from Newfoundland where much hope rests on the development of offshore oil fields and later, the production phase of that mega-project. However, the fallout from such a project on the regional economy is small. In fact, the discrepancy between GDP and income growth rates (Table 1.2.3) reflects the existence of important economic leaks to other provinces and also some to the external sector. A slowdown in outmigration is expected to follow.

Growth in Central Canada will outpace growth in other provinces. Of particular importance to the economic performance of the province of Québec is the development of additional and export-oriented hydroelectric capacity and the continued rejuvenation of the manufacturing sector. Economic growth in Ontario is expected to be the highest of all provinces. Manufacturing continues to lead growth in that province. Pro-natalist policies of the government of Québec are expected to slow the downward trend in the fertility rate of the province.

Western Canada is expected to slowly recover its relative importance in the Canadian economy following the mid-eighties demise in oil prices, the most severe drought in years and the recent strength of the Canadian dollar. The real price increase expected in the energy sector should justify major energy investments in that sector.

2.0 TRENDS AND FORECASTS IN AVIATION

2.1 Recent Trends

Aviation traffic has climbed steadily in recent years following the significant drop in demand of the 1981/82 recession. In recent years, we have been observing many changes in the air carrier industry which have come about as a result of economic regulatory reform. A major operational change has been the restructuring of the Canadian airline route network on the hub-and-spoke system. This has resulted in the replacement of jet aircraft by turbo-props on many regional routes and has accelerated the increase of the number of air carrier aircraft movements. For example between 1986 and 1988, total air carrier aircraft movements increased at an annual average rate of 12.9%, much faster than the comparable rate of 5.0% per annum for passenger (enplanements plus deplanements) demand. More details on these trends appear on Table 2.0.1, below.

Another factor which has influenced aviation demand in recent years has been the development of very sophisticated yield management systems which have enabled the major carriers to introduce significant air fare reductions (Deep discount fares) on high-density and/or long-haul highly competitive routes.

TABLE 2.0.1

ACTUAL (1983-1988) AND FORECAST TOTAL AVIATION TRAFFIC (1989-1996)

YEAR	PASSENGERS(a) ('000,000)	AIR CARRIER AIRCRAFT MOVEMENTS(b) ('000)
1983	42.9	808.9
1984	46.1	894.9
1985	48.4	974.5
1986	52.3	1067.1
1987	54.0	1164.8
1988 est	58.6	1361.0
1989	60.9	1481
1990	63.0	1555
1991	67.1	1625
1996	81.3	1817
Average Annual Growth Rate (%)		
1983-87	5.9	9.5
1987-96	4.7	5.1

(a) Enplaned and deplaned passengers at "Top 30" airports

(b) Air carrier itinerant aircraft movements at tower airports

Until 1982, traffic growth was concentrated in the Domestic and Transborder traffic. In recent years, it has been the Other International traffic that has displayed significant growth. In 1987, the traffic split between the sectors was 70%, 19% and 11% for the domestic, Transborder and Other International sectors respectively. See Table 2.0.2.

TABLE 2.0.2

ACTUAL (1983-1988) AND FORECAST REGIONAL AVIATION TRAFFIC (1989-1996)

YEAR	PASSENGERS(a) ('000,000)			
	DOMESTIC	TRANSBORDER	OTHER INT	TOTAL
1983	29.9	9.0	4.0	42.9
1984	32.3	9.5	4.3	46.1
1985	34.1	9.5	4.9	48.4
1986	36.6	10.5	5.1	52.3
1987	37.0	10.9	6.1	54.0
1988 est	40.8	11.4	6.5	58.6
1989	42.5	11.8	6.6	60.9
1990	43.9	12.2	6.9	63.0
1991	46.8	13.0	7.3	67.1
1996	56.2	16.0	9.1	81.3
Average Annual Growth Rate (%)				
1983-87	5.5	4.9	11.1	5.9
1987-96	4.8	4.4	4.5	4.7

(a) Enplaned and deplaned passengers at "Top 30" airport

During the years leading to up to the recession, traffic in Western Canada grew more rapidly then in Eastern Canada due to the strong growth in the resource sector. In recent years, growth has shifted to Eastern Canada, in particular to Ontario and Quebec. This is due in part to the stronger growth in the manufacturing sector. More details on these trends appear on Table 2.0.3, below.

TABLE 2.0.3

ACTUAL (1983-1988) AND FORECAST REGIONAL AVIATION TRAFFIC (1989-1996)

YEAR	PASSENGERS(a) ('000,000)					
	ATLANTIC	QUEBEC	ONTARIO	CENTRAL	WESTERN	PACIFIC
1983	3.1	7.8	16.6	4.0	7.6	8.6
1984	3.5	8.7	18.1	4.3	7.8	9.1
1985	3.7	8.9	19.7	4.4	8.0	9.6
1986	3.9	9.2	21.3	4.7	8.0	11.0
1987	4.4	9.5	22.8	4.7	7.9	10.5
1988 est	4.8	10.3	24.5	5.1	8.3	11.0
1996	6.4	14.5	34.4	7.2	11.2	15.7
	Average Annual Growth Rate (%)					
1983-87	9.1	5.1	8.3	4.1	1.0	5.1
1987-96	4.3	4.8	4.7	4.9	4.0	4.6

(a) Enplaned and deplaned passengers, all airports, all services

In recent years, Canada's "Top 3" airports (Pearson Int'l, Vancouver Int'l and Dorval) increased their share of total passengers and in 1987 handled about 56% of the total passenger demand. By comparison, major western airports such as Calgary Int'l, Edmonton Int'l and Winnipeg Int's experienced a slight drop in their share of total passenger demand. More details on these trends appear on Table 2.0.4, on page 9.

TABLE 2.0.4 (I)

ACTUAL (1983-1988) AND FORECAST AVIATION TRAFFIC (1989-1996)

	PASSENGERS (a) ('000,000)								
YEAR	PEARSON	VANCOUVER	DORVAL	CALGARY	OTTAWA	WINNIPEG	HALIFAX	MIRABEL	EDMONTON INT'L
1983	13.6	6.4	5.1	3.8	1.9	2.0	1.4	1.3	2.0
1984	14.7	6.8	5.6	3.9	2.1	2.1	1.6	1.5	2.0
1985	15.8	7.0	5.5	3.9	2.3	2.2	1.8	1.7	2.0
1986	17.1	8.4	5.7	4.0	2.3	2.3	1.8	1.9	2.1
1987	18.4	7.8	6.0	4.1	2.4	2.2	2.1	2.0	1.9
1988 est	20.4	8.9	6.5	4.4	2.7	2.5	2.3	2.2	2.0
1989	21.1	9.3	6.8	4.6	2.8	2.6	2.4	2.3	2.1
1990	21.6	9.6	6.9	4.8	2.9	2.7	2.5	2.4	2.2
1991	22.7	10.1	7.4	5.1	3.1	2.8	2.6	2.5	2.3
1996	6.0	11.9	8.6	5.9	3.8	3.4	2.9	3.4	2.8
	Average Annual Growth Rate (%)								
1983-87	7.8	5.1	4.1	1.9	6.0	2.4	10.7	11.4	-1.3
1987-96	3.9	4.8	4.1	4.1	5.2	5.0	3.7	6.1	4.4

(a) Enplaned and deplaned passengers, all services

2.0 Forecasts

Passenger traffic growth is expected to be moderate in 1990 as a result of the expected downturn in the economy between 1989 and 1990. However, because of the expected concentration of future growth in the discretionary air travel market and because of the subsequent expected recovery in the economy, traffic is expected to be relatively strong in the period 1991 to 1993. Between 1987 to 1996, passenger traffic is expected to grow at 4.7% per annum.

The forecast for short-to medium term air carrier movements is produced by incorporating assumptions based on passenger demand and assumptions concerning load factors and aircraft sizes. The recent trend of the replacement of jet aircraft by turbo-props on regional routes is expected to level off as a result of the expected completion of the "restructuring" of the airline industry and the stabilization of air carrier market niches. Between 1987 to 1996, air carrier aircraft movements traffic is expected to grow at 5.1% per annum.

Across Canada, the forecast growth in passenger traffic will generally reflect the anticipated distribution of economic growth. This is the case for Ontario, Quebec and Central regions where passenger growth is expected to be at or above the national growth. Since the Pacific region is a major tourist attraction and a gateway to the rapidly expanding Pacific Rim market, it is expected to experience stronger growth than is warranted by its economic outlook. Western and Atlantic regions are expected to grow at rates below the national average.

In Ontario region, Pearson International Airport is expected to experience high growth in absolute number of passengers due to Toronto's location in the centre of the area expected to experience the highest economic growth as well as the airports' role as the key hub for major operators of jet and commuter airlines. Ottawa International Airport's role as an administrative centre combined with the strong economic growth in the province are expected to stimulate passenger traffic growth at this airport.

In the Quebec region, Dorval Airport will continue serving primarily domestic and transborder traffic, while Mirabel Airport will continue to serve primarily international passenger and all cargo traffic. Dorval will continue to serve as a hub airport for the Quebec region. The growth in international travel in the coming years is expected to benefit Mirabel Airport

given the extensive international air transportation network already in place. Future expansion in the air passenger market is expected to occur in the discretionary segment, which dominates international travel.

In Central region, Winnipeg International Airport is expected to benefit from its role as a regional hub for Manitoba and Northern Ontario and its location in a city with a balanced economy.

In Pacific region, Vancouver International Airport's location in the heart of one of Canada's major tourist attractions, and its role as the gateway to the rapidly growing Pacific Rim market and as a western hub for domestic traffic, suggest a stronger passenger traffic growth for the airport than the outlook for the B.C. economy alone might warrant.

In the Western region, Calgary International Airport is expected to benefit from its likely role as the regional air hub in Alberta for Canadian Airlines International. Unlike Edmonton, it does not require connecting passengers to commute between two airports. Edmonton International Airport is expected to continue to serve as a regional air hub. However it is expected to lag behind Calgary as Alberta's major hub.

In Atlantic region, Halifax International Airport is not only expected to benefit from its role as the hub airport for the Atlantic region. It is also expected to become the focal point for traffic in the region as a result of the growth arising from the eventual extraction of offshore oil.

2.3 Trends and forecasts: The Canadian Airline Industry

Recent Trends

On May 10, 1984, the federal government announced a new Canadian domestic air-carrier policy aimed at reducing the economic regulation of the air carrier industry in Southern Canada to the extent possible under existing legislation. Specifically, among other measures taken, the policy renoved restrictions from air carrier licences, encouraged carriers to apply for licence consolidation, asked the Canadian Transport commission (CTC) to give greater weight to the benefits of competition, and envisaged full downward price flexibility for carriers by 1986.

The National Transportation Act was passed and came into effect on January 1, 1988. By then, the Canadian

airline industry had already began a massive restructuring, with various acquisitions, mergers and alliances. As a result three strongly competitive airline groups emerged, headed by Air Canada with about 50% of the passenger traffic, Canadian Airlines International Limited (CAIL) with about 37% and Wardair with about 8%. Recently, Wardair was integrated with CAIL.

Under these banners, the whole network of Canadian airline routes has been restructured on the hub-and-spoke system. The major operational change in this new market environment is that the feeder airlines are now operating turbo-prop equipment on many routes which previously received jet service.

In recent years, the Canadian carriers have attempted to gain competitive cost advantages through productivity improvements. They have achieved it by streamlining operations through mergers and acquisitions in the industry and by instituting fuel-saving procedures and by changing over their aircraft to more fuel efficient models. Figure 2-1 and 2-2 show, respectively, the recent levels of employee productivity achieved in the Canadian airline industry and the recent industry trends in fuel efficiency.

Forecasts

The forecast assumes that the Canadian airlines will continue their efforts to make cost savings through productivity improvements throughout the forecast period.

With respect to employee productivity, however, there will be diminishing returns due to the fact that most of the gains achievable through streamlining of operations have already been made.

The biggest gains in fuel efficiency have yet to come as Canadian airlines are in the process of acquiring new fuel efficient aircraft worth an estimated 5.5 billion dollars. Appendix I presents a summary of the fleet acquisition program of the Canadian airlines over the next few years. In preparing the forecasts, it has been assumed that the gains in fuel efficiency will offset expected increases in aviation turbo fuel prices.

3.0 TRENDS AND FORECASTS IN FREIGHT TRANSPORT

Recent Trends

Over the five-year period of 1983 to 1987, yearly change in freight traffic by the rail and marine modes have been erratic. After the recovery of 1983 and 1984, the traffic of these two modes fell in 1985 and remained stable in 1986. Marine and rail traffic rebounded significantly in 1987, advancing by 7.9%. These fluctuations reflected the vagaries of the world market conditions for key commodities such as grains, iron ore and coal which together make up 45% of the freight moved by the rail and marine modes. More details appear on Table 3.0.1, below.

TABLE 3.0.1

ACTUAL (1983-1987) AND FORECAST FREIGHT TRAFFIC (1990-1994)

(Million Tonnes)

YEAR	RAIL	MARINE	ST	TRUCKING[1]	TOTAL
1983	222	249	471	149	620
1984	254	274	528	163	691
1985	243	266	509	161	670
1986	243	267	510	187	697
1987	254	295	549	231	780
1990	261	313	574	250	824
1991	265	320	585	260	845
1992	266	322	588	268	856
1993	269	327	596	275	871
1994	267	327	594	279	873
Average Annual Growth Rate (%)					
1983-87	3.5	4.3	3.9	8.2[2]	5.9
1987-94	0.7	1.5	1.1	2.2	1.6

1 Excludes transborder traffic, from 1983 to 1986.
2 Growth rate based on domestic traffic.

For-hire trucking traffic is less dependent on the supply-demand market conditions of large commodities. Year to year changes in truck traffic must be viewed with caution, as changes may be the result of as much underlying economic factors as changes in survey methodology or response rate.

Forecasts

Total freight traffic is expected to grow at 1.6% a year from 1987 to 1994. Trucking traffic should advance at a more rapid pace, 2.8% a year, in keeping with the stronger growth expected for the manufacturing sector on which the trucking industry is essentially dependant for its traffic. Slower growth anticipated for rail (0.7%) and marine (1.5%) reflects the maturity of markets served by these two modes.

By sector of activity, inbound traffic from offshore will exhibit the strongest growth, followed by transborder trucking reflecting in part the impact of the FTA. In contrast, transborder rail and marine traffic and domestic rail traffic will grow at a modest rate of less than 1% a year. More details appear on Table 3.0.2.

TABLE 3.0.2

FREIGHT FORECAST BY SECTOR OF ACTIVITY, 1987, & (1990-1994)

(Million Tonnes)

	1987	1990	1991	1992	1993	1994	AAGR(%) (1987-94)
DOMESTIC							
Rail	208	214	217	218	220	219	0.7
Marine	67	70	73	74	76	76	1.8
Trucking	205	221	231	237	243	247	2.7
ST	480	505	521	529	539	542	1.7
TRANSBORDER							
Rail	47	47	48	48	48	49	0.7
Marine	73	74	75	76	77	76	0.6
Trucking	26	29	30	31	32	32	2.9
ST	146	150	153	155	157	157	1.1
OVERSEAS (MARINE)							
Outbound	119	127	128	130	132	131	1.3
Inbound	35	42	43	42	43	43	3.2
ST	154	169	171	172	175	174	1.7
TOTAL	780	824	845	856	871	873	1.6

3.1 Trends and Forecasts: Marine

Recent Trends

The maritime sector is an important component of Canada's transportation industry. In terms of value, in 1987 22.5 percent of this country's exports and 18.2 percent of imports were handled by the marine mode. Compared to 1986, market share increased from 21.1 percent and 17.9 percent respectively.

Total coastwise and international commodity flows have increased by over 25 percent between 1983 and 1988. Until 1986 domestic traffic decreased each year, however volumes have now returned to 1983 levels due to large increases in both 1987 and 1988. Total international volumes have also seen large increases in

1987 and 1988, with an overall increase of over 38 percent over the 1983 to 1988 period.

Preliminary statistics for 1989 indicate a decrease in the order of 8 to 10 percent for total marine traffic volumes. A decrease of this magnitude would return overall volumes to those experienced in 1987.

Table 3.1.1 shows historical traffic volumes, by sector, for the marine mode.

Forecasts

Total marine flows (1) are forecast to increase by 10 percent over the period 1987 to 1994. This includes the large increase noted in 1988 and the expected decline in traffic levels experienced in 1989.

Increased grain, iron ore, coal and petroleum traffic are the primary forces behind the forecast increase in domestic traffic volumes. Offshore traffic is also expected to increase in the order of 10 percent between 1987 and 1994. Increased imports of alumina and crude oil along with increases in exports of grain, coal, potash and containerized goods all contribute to the forecast growth. Traffic volumes in the Canada - U.S. Great Lakes and U.S. Other sectors are expected to remain stable.

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1 Commodity **flow** volumes are used to indicate the amount of cargo shipped between port of origin and port of destination; volumes **loaded** and **unloaded**, indicate a measure of port activity

TABLE 3.1.1

HISTORICAL (1983-198) and FORECAST (1990-1994)
MARINE TRAFFIC FLOWS

(Million Tonnes)

	TOTAL	DOMESTIC	U.S. G-L	U.S. OTHER	OFFSHORE
1983	248.7	70.2	38.5	20.1	119.9
1984	274.1	68.7	44.4	27.7	133.3
1985	265.8	61.7	38.9	31.2	134.0
1986	267.1	60.4	35.4	32.9	138.3
1987	294.6	67.6	38.1	35.2	153.7
1988P	315.0	70.0	n/a	n/a	n/a
1990	313.1	69.9	35.5	38.9	168.8
1991	320.3	73.5	36.0	39.5	171.3
1992	322.5	74.3	36.1	39.8	172.3
1993	327.0	75.7	36.8	39.9	174.6
1994	326.6	76.6	36.6	39.9	173.5
Average Annual Growth Rate (%)					
83-87	4.3	(1.0)	-	15.0	6.4
87-94	1.5	1.8	(0.6)	1.8	1.8

Preliminary 1988 "Total International" shipments are 246 million tonnes, an increase of 8% over 1987

LEGEND: U.S. G-L - U.S. Great Lakes Ports
U.S. OTHER - Other U.S. Ports

From a regional perspective, Newfoundland is expected to double the amount of volumes loaded and to increase unloadings by over 67% between 1987 and 1994. To a large extent, the major force behind these increases is the re-opening of the Come-By-Chance refinery, which imports feedstock from offshore suppliers and in turn ships refined products mostly to New England markets. A further shift in traffic patterns is expected as local (Newfoundland) fuel oil and other petroleum products requirements start to be met by the Newfoundland refinery rather than from Maritimes facilities.

In terms of loadings, British Columbia will continue to lead the nation. The export of coal, forest products, fertilizer materials and the ongoing shift to a larger proportion of grain traffic, along with robust

containerized traffic, all contribute to this region's dominance. While unloadings are not expected to increase significantly, increased imports of zinc concentrate and the containerized cargo trades ensure a slow but steady growth in incoming traffic volumes.

Increases in the supply of iron ore to the Canadian steel producing facilities along with a healthy container industry ensure continuing increases in volumes loaded in Quebec. Significant expansion, in terms of both existing and new aluminum refineries and containerized traffic are the primary contributors to the growth in unloadings.

Tables 3.1.2 and 3.1.3 summarize expected trends in loadings and unloadings from a regional perspective.

TABLE 3.1.2

TOTAL MARINE LOADINGS, BY PROVINCE/REGION

(Million Tonnes)

	NFLD	MARIT-IMES	QUEBEC	ONTARIO	PRA.	B.C. & TERR
1987	2.0	21.3	63.8	34.2	0.6	103.8
1990	4.2	22.3	66.6	35.7	0.6	111.6
1991	4.3	22.5	68.6	37.8	0.6	113.3
1992	4.3	22.7	69.3	38.0	0.6	114.5
1993	4.3	22.8	70.0	38.9	0.7	116.6
1994	4.3	23.1	69.4	39.3	0.7	115.2
Average Annual Growth Rate (%)						
87-94	11.6	1.1	1.2	2.0	2.2	1.5

TABLE 3.1.3

TOTAL MARINE UNLOADINGS, BY PROVINCE/REGION

(Million Tonnes)

	NFLD	MARIT-IMES	QUEBEC	ONTARIO	PRA.	B.C. & TERR
1987	4.3	16.9	42.9	41.9	-	29.7
1990	7.1	18.8	45.4	40.4	-	30.3
1991	7.2	19.1	46.7	43.2	-	31.0
1992	7.1	18.9	47.0	42.8	-	31.7
1993	7.2	19.1	47.8	43.4	-	32.2
1994	7.2	19.3	48.4	44.0	-	32.7
Average Annual Growth Rate (%)						
87-94	7.6	1.9	1.7	0.7	-	1.4

3.2 Trends and Forecasts: Rail

Recent trends

After increasing by about 15% in 1984, rail traffic declined by 4.5% in 1985, following a drought which caused a substantial fall in grain exports. Traffic remained stable in 1986, as residual effects of the drought still affected movements of grains before going back to its 1984 level in 1987 (Table 3.2.1). All in all, total tonnage carried by rail increased by about 15% over the period.

Domestic movements account for the largest part of rail traffic -- 82% on average, between 1983 and 1987. These movements have grown at the same rate as total rail traffic over the period. Export flows, on the other hand, have increased significantly in 1984 before decreasing slightly and later stabilizing at around 33 million tonnes or about 13% of rail traffic in 1987. These figures should not lead us to discount the key role played by the rail mode in Canadian exports. Many of our key exports (grains, coal, mineral ores, etc...) depend on rail to be brought to ports for marine shipment. Import flows have gone up and down since 1983, although never moving far away from the 10 million tonnes mark. Finally, a small portion of traffic carried by Canadian carriers is made up of

transfers from American carriers and destined to American locations. This traffic averaged 3.7 million tonnes between 1983 and 1987.

Forecast

Total rail traffic is expected to grow at less than one percent per year between 1987 and 1994 (Table 3.2.1). This low growth arise from weak markets for some of the key bulk commodities on which rail is dependent. Iron ore and non-ferrous metals, for example, accounted for 17% of rail traffic in 1987. Most of this traffic is dependant on overseas exports; however, these are forecast to decline at an average 1.7% a year over the period. Similarly, fertilizer materials account for about 8% of traffic; the combined exports of these (potash and sulphur) are also expected to decrease over the period. Other key sectors like mineral construction materials (5% of traffic in 1987) will grow only marginally. Positive impact will come from coal and traffic of forest products.

TABLE 3.2.1

HISTORICAL AND FORECAST RAIL TRAFFIC BY SECTOR

(Million tonnes)

	DOMESTIC	EXPORTS	IMPORTS	US TO US	TOTAL
1983	181.2	27.7	9.5	3.4	221.8
1984	204.5	35.1	10.3	4.5	254.4
1985	195.8	33.5	9.6	3.9	242.9
1986	196.3	33.0	10.0	3.4	242.7
1987	208.1	33.4	9.6	3.5	254.6
1990	213.9	33.5	10.0	3.4	260.8
1991	216.8	34.2	10.1	3.4	264.5
1992	217.5	34.5	10.2	3.5	265.7
1993	220.5	34.6	10.3	3.5	268.9
1994	218.8	34.7	10.4	3.6	267.5
			Average Annual Growth Rate (%)		
1983-87	3.5	4.8	0.1	0.4	3.5
1987-94	0.7	0.5	1.2	0.4	0.7

Regionally, the highest growth will come from British Columbia, at 1.6% per year, mainly because of the forest industry and coal exports (Table 3.2.2). These factors also explain why that province was also the leading shipper over the 1983-1987 period. As has been

the case since 1983, Quebec will follow with an average growth rate of 1.3%, mainly because of the growth of the forest sector. Ontario will still have the lowest growth of all regions, because of the continuing decline in mineral ores. The Prairies region is the most important Canadian region in terms of rail loadings with about 34% of the Canadian total in 1987, because of the importance of grains, fertilizers and coal shipped to ports for exports. However, with the anticipated decline in potash and sulphur exports, combined with relatively low growth in grains exports, rail loadings in the region are expected to grow at only 0.3% per year, on average, over the period.

The ranking of future regional growth, in terms of unloadings (Table 3.2.3) is similar to that of loadings. The regional distribution of unloadings, however, (Table 3.2.3) follows a pattern different from that of loadings. The most important regions are those from which traffic is shipped overseas -- British Columbia, Quebec and, to a lesser extent, the Atlantic region as well as Ontario with the high volumes of grains unloaded at Thunder Bay. Significantly, total unloadings should decline in Ontario, the only region where it is expected to happen, because of the lesser share of grains exports expected for the East Coast and because of declines in mining activity. As for the Prairies, they have the lowest share of total Canadian unloadings with only 6.6% in 1987.

TABLE 3.2.2

RAIL LOADINGS BY REGION

(Million Tonnes)

	ATL	QUE	ONT	PRA	BC	TER	CANADA
1983	31.2	31.8	37.7	73.2	34.7	0.2	208.9
1984	34.3	38.3	44.0	78.6	44.1	0.3	239.6
1985	35.1	38.1	39.9	68.9	47.0	0.3	229.3
1986	35.0	38.2	39.7	71.9	44.3	0.3	229.3
1987	34.5	37.9	38.9	82.8	47.1	0.3	241.6
1990	37.3	39.8	38.7	80.5	51.2	0.0	247.4
1991	37.1	41.1	37.8	83.0	51.8	0.0	251.0
1992	37.2	41.0	38.0	83.6	52.3	0.0	252.1
1993	37.0	41.3	38.4	85.8	52.6	0.0	255.1
1994	36.1	41.5	38.8	84.5	52.7	0.0	253.5
Average Annual Growth Rate (%)							
1983-87	2.5	4.5	0.8	3.1	7.9	10.4	3.7
1987-94	0.6	1.3	0.0	0.3	1.6	0.0	0.7

TABLE 3.2.3

RAIL UNLOADINGS BY REGION

(Million Tonnes)

	ATL	QUE	ONT	PRA	BC	TER	CANADA
1983	17.9	47.2	54.1	14.1	57.1	0.2	190.7
1984	17.9	54.4	59.8	14.6	67.8	0.2	214.8
1985	17.0	55.3	50.7	14.9	67.3	0.2	205.4
1986	18.5	54.7	50.8	14.6	67.6	0.2	206.4
1987	18.7	53.9	55.8	14.3	74.7	0.1	217.7
1990	19.0	56.8	52.4	14.3	81.1	0.2	223.9
1991	19.2	57.8	53.6	14.5	81.6	0.2	226.8
1992	19.3	57.5	53.8	14.7	82.3	0.2	227.7
1993	19.3	57.5	54.7	14.8	84.2	0.2	230.8
1994	19.3	56.6	55.2	15.0	82.8	0.2	229.2
Average Annual Growth Rate (%)							
1983-87	1.1	3.4	0.8	0.4	6.9	-14.4	3.4
1987-94	0.5	0.7	-0.2	0.7	1.5	8.7	0.7

3.3 Trends and Forecasts: Trucking Recent Developments

The output of the domestic segement of the for-hire trucking industry experienced rapid growth since 1985. Tonnages registered an average annual growth rate of 14.5% and tonne-kilometres 13.0% for the period 1985-87. This was a remarkable performance, inasmuch as the growth rate of the industry exceeded national economic growth, in real terms by a wide margin. Revenues, on the other hand, only grew at 6.8% per annum as a result of the high degree of competition that prevailed over the period (see Table 3.2.1).

Table 3.3.1

RECENT TRENDS IN THE FOR-HIRE TRUCKING INDUSTRY 1983-1987

	TONNAGE DOMESTIC (000 000t)	T-KM DOMESTIC (billion)	TOTAL REVENUE (billion)	PRICE INDEX (1981=100)	OPERATING RATIO
1983	149.3	41.9	5.7	106.72	96.1
1984	162.2	43.6	6.7	110.68	95.3
1985	160.9	43.7	7.8	119.85	95.5
1986	187.2	48.9	8.2	118.20	95.0
1987	204.8	57.3	8.9	113.21	95.6

The growth in the dometic segment of the industry was reinforced by a strong performance in transborder markets. During the 1983-87 period, transborder revenues increased their share of total revenues from 12.0% to 15.8% and in terms of tonnages reached 11% of the total by 1987.

TABLE 3.3.2

TOTAL TRAFFIC BY TRUCK
(million tonnes)

	DOMESTIC	EXPORT	IMPORT	TOTAL
1987	204.8	17.3	9.1	231.2
1990	221.8	18.7	9.9	250.4
1991	230.6	19.5	10.3	260.4
1992	236.9	20.1	10.7	267.7
1993	243.0	20.7	11.0	274.7
1994	246.8	21.0	11.2	279.0
AAG (%) 1987-94	2.7%	2.8%	2.9%	2.7%

A high proportion of trucking activity is dependant on the demand for manufactured goods, either directly, in the ovements of goods between manufactures and consumers, or indirectly, in bringing inputs into the production process. To that extent, trucking activity is normally closely linked to economic activity. However, recent growth in trucking activity, greatly in excess of economic growth, probably arises from a decline in rail traffic which is either due to line abandonments or increased competiveness of the trucking industry. This latter proposition is supported by the increased importance of semi-finished products in the total tonnage moved by truck.

Forecast:

The traffic flow forecasts for trucking are based on two basic assumptions:

1. The relationship that exists between economic activities and the demand for this service will hold for the future;

2. The structural adjustments between the modes, stemming from economic regulatory reform have largely been completed.

Tables 3.3.3 and 3.3.4 present truck loadings and unloadings respectively, by region. Not surprisingly, the statistics reflect the general economic and trading patterns of the various regions. In 1987, Ontario originated more than 37% of the total tonnages while it received 36% and was followed by the Prairies with

about 20% of the totals. Quebec originated 17% and received a 16% of the traffic, while the remaining regions and the U.S.A. accounted for the remaining quarter. Ontario is expected to gain in importance during the 1990's with both loadings and unloadings growing at rates in excess of the national average.

In terms of tonnages, transborder traffic is not expected to be influenced to a large extent by the Free Trade Agreement. This is so, as the part of merchandise trade which is most likely to grow as a result of the agreement is characterized by high unit values rather than volumes. Nevertheless, as Table 3.2.2 illustrates, the rates of growth for North-South movements are expected to be above those of East-West movements. Growth in both directions is expected to be about 2.5 to 3.8%.

TABLE 3.3.3

TRUCK LOADINGS BY REGION
(million tonnes)

	ONTARIO	PRAIRIES	QUEBEC	ATL	B.C.*
1987	86.6	46.5	39.6	16.6	33.2
1990	94.1	50.0	42.8	17.8	35.9
1991	99.4	51.4	44.2	18.3	36.8
1992	103.1	52.1	45.4	18.8	37.6
1993	106.7	52.8	46.6	19.2	38.4
1994	108.6	53.7	47.3	19.4	38.9
TCA (%) 1987-94	3.3	2.1	2.6	2.3	3.0

*B.C. includes the Territories

TABLE 3.3.4

TRUCK UNLOADINGS BY REGION
(million tonnes)

	ONTARIO	PRAIRIES	QUEBEC	ATL	C.B.
1987	83.8	45.6	36.9	16.1	32.0
1990	91.0	49.0	39.8	17.3	34.5
1991	96.1	50.4	41.2	17.7	35.4
1992	99.7	51.1	42.3	18.2	36.2
1993	103.1	51.9	43.4	18.6	36.9
1994	105.0	52.7	44.1	18.8	37.4
AAG (%) 1987-94	3.3	2.1	2.6	2.3	2.8

*B.C. includes the Territories

Aircraft on order by Canadian Carriers as of September 1989

Type	Number of Seats	Number of Aircraft on order	Unit Cost Million Current U.S. Dollars	Total Financial Commitment Million Current U.S. Dollars
A320	140	69	38.0	2,622.0
767	215	11	73.3	806.3
747-400 Com.	300	3	126.5	379.5
747-400	420	3	119.5	358.5
Reg. Jet	48	10	13.0	130.0
146	98	1	21.0	21.0
Dash 8-100	36	19	7.7	146.3
Dash 8-300	56	18	9.5	171.0
ATR 42	46	6	9.0	54.0
TOTAL				4,688.6 (or 5,516 CDN $)

Source: AISL, World Airliner Orders Backlog

APPENDIX 1

KEY COMMODITY ASSUMPTIONS

A number of key commodities play a very important role in terms of Canada's overall freight traffic. The critical assumptions associated with these commodities, along with future expectations, in terms of exports, imports and production, are presented below.

IRON ORE (million tonnes):			
	PRODUCTION (Shipments)	EXPORTS	IMPORTS
1987	37.6	29.7	5.2
1988	40.7	30.5	4.8
1990	37.3	28.0	5.6
1991	36.7	27.8	6.1
1992	36.2	27.7	6.0
1993	36.0	27.4	6.2
1994	35.0	26.4	6.3

Comments:

- There is an expected slow increase in demand by domestic steel producers using basic oxygen technology.
- Exports to EEC countries expected to slowly decline over the forecast period.
- Total exports to the United States are forecast to remain stable. Over the forecast period a shift in market areas is expected to occur, with a larger proportion of volumes exported to U.S. East Coast locations than to steel facilities on the U.S. Great Lakes.

GRAINS (million tonnes)			
	TOTAL EXPORTS	WEST COAST SHARE IN %	EAST COAST SHARE IN %
1987	31.57	54	46
1988	25.6(1)	n/a	n/a
1990	30.90	58	42
1991	31.56	57	43
1992	32.50	56	44
1993	33.38	56	44
1994	33.83	56	44

(1) Preliminary

Comments:

- 1989 export levels are expected to be much lower (probably in the order of 20 million tonnes) than those realized in 1988 as a consequence of last years drought.

- Forecast assumes continuous strong exports to China and the Soviet Union. If these markets were to become more self-sufficient, or if Canada were to loose its market share in these countries, the forecast would be much lower.

- The East Coast's market share of total export volumes could drop further if the competitiveness of the Eastern routing continues to deteriorate. The Eastern routing has become the shift supplier, handling residual export volumes.

ALUMINUM PRODUCTION (million tonnes)		
	EASTERN CANADA	WESTERN CANADA
1987	1.266	.274
1988	1.260	.275
1990	1.345	.275
1991	1.582	.275
1992	1.508	.275
1993	1.508	.275
1994	1.607	.275

Comments:

- Strong demand and continuing high prices are ensuring that committed and planned investments in Canada's aluminum producing sector will generate robust growth in this industry over the forecast period.

- Production capacity is expected to increase by over 20% between 1987 and 1994, with further increases by the end of the decade.

- Western Canada (Kitimat) has a planned expansion of 160,000 tonnes production capacity for the post 1994 period.

- Bauxite imports over the forecast period are expected to decline by over 60%, as offshore imports of alumina increase to meet the needs of the newer plants.

COAL (million tonnes)			
	TOTAL EXPORTS	SHIPMENTS TO ONTARIO	EXPORTS OF COKING COAL
1986	25.9	15.7	21.5
1987	26.7	18.3	22.4
1988 (1)	33.0	n/a	27.0
1990	33.2	15.0	28.7
1991	33.3	16.4	28.7
1992	33.4	16.1	28.7
1993	33.4	16.3	28.7
1994	33.5	16.4	28.7

(1) Preliminary

Comments:

- Average coke to pig iron ratios in Canadian blast furnaces forecast to decrease from .510 in 1987 to .459 by 1991.

- Continued strong performance of Japanese steel industry in 1988 major reason for large jump in 1988 coking coal exports

CRUDE OIL (million tonnes) CRUDE OIL REQUIREMENTS AT REFINERY LEVEL		
	ATLANTIC REFINERIES	ULTRAMAR (QUEBEC)
1987	10.835	4.250
1990	15.240	4.925
1991	15.325	4.925
1992	15.080	4.925
1993	15.160	4.925
1994	15.240	4.925

Comments:

- The large increases in the Atlantic region after 1987 are due to the re-opening of the Come-By-Chance refinery in Newfoundland. The refinery will produce in the order of 40,000 barrels of gasoline and 20,000 barrels of heavey fuel oil per day, all destined to New England markets.

- High capacity utilization at the Ultramar refinery reflects the tight supply situation in the Quebec markets.

- The forecasts assume that Hibernia will not be in production by 1994.

POTASH (millions of tonnes) PRODUCTION (K2O EQUIVALENT)		
	EASTERN CANADA	WESTERN CANADA
1987	.9	6.8
1988	1.0	7.1
1990	1.2	7.4
1991	1.2	7.6
1992	1.2	7.7
1993	1.2	7.8
1994	1.2	7.9

Comments:

- Market demand is the primary determinant of changes in production.

- Exports to the United States remain slow. Production from Eastern Canada has eroded some of the traditional market share of Western Canadian suppliers to markets along the U.S. eastern seaboard.

- Offshore markets remain strong, although some fluctuation can be expected in markets such as China, where the availability of hard currency and international relations impacts upon purchases.

NON-FERROUS METALS (millions of tonnes)		
	MARINE EXPORTS OF CONCENTRATES	MARINE IMPORTS OF CONCENTRATES
1987	2.6	.2
1988	n/a	n/a
1990	2.4	.7
1991	2.3	.8
1992	2.2	.8
1993	2.1	.8
1994	2.0	.8

Comments:

- Decline in international outbound traffic reflects the reduced availability of concentrate for export markets.

- Increase in imports reflects the process of substitution of foreign concentrate in smelters in Quebec (Noranda) and British Columbia (Trail).

NEWSPRINT AND WOODPULP (million tonnes)		
	EXPORTS	
	NEWSPRINT	WOODPULP
1987	8.6	8.2
1988	8.6	8.3
1990	9.6	8.9
1991	9.8	9.2
1992	10.0	9.6
1993	10.3	10.0
1994	10.6	10.3

Comments:

- Exports increase in parallel with the additions in capacity, occuring mostly in Alberta, British Columbia and Quebec. Steady increases in exports are foreseen.

LUMBER (million tonnes)			
	EXPORTS TO U.S.	EXPORTS OFFSHORE	DOMESTIC SHIPMENTS
1987	14.1	3.1	8.3
1988	13.1	3.5	8.2
1990	13.1	4.9	6.6
1991	14.0	5.2	7.4
1992	14.2	5.2	7.4
1993	14.2	5.3	7.3
1994	14.1	5.2	7.1

Comments:

- North American markets will experience a slowdown in housing construction.

- Stronger demand in Asia and Europe represents an opportunity for the lumber industry to diversify its markets.

GYPSUM (million tonnes)		
	EXPORTS TO U.S.A.	DOMESTIC DEMAND
1987	5.4	3.3
1988	5.5	3.3
1990	5.5	3.3
1991	5.6	3.3
1992	5.6	3.3
1993	5.6	3.3
1994	5.7	3.3

Comments:

- Exports to U.S. expected to increase very slowly, due in large part to the sluggish housing industry